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We Claim:

1. A TP2 nucleic acid molecule encoding a polypeptide selected from the group consisting of:

- (a) the nucleic acid molecule of SEQ ID NO:13;
- (b) the nucleic acid molecule that is nucleotides 1920-2820 of SEQ ID NO:13;
  - (c) the nucleic acid molecule of SEQ ID NO:19
- 10 (d) a nucleic acid molecule encoding the polypeptide of SEQ ID NO:14, or a biologically active fragment thereof;
  - (e) a nucleid acid molecule encoding the polypeptide of SEQ ID NO:20, or a biologically active fragment thereof;
  - (f) a nucleic acid molecule that encodes a polypeptide that is at least 90 percent identical to the polypeptide of SEQ ID NO:14;
- (g) a nucleic acid molecule that encodes a polypeptide that is at least 90 percent identical to the polypeptide of SEQ ID NO:20;
  - (h) a nucleic acid molecule that hybridizes under stringent conditions to any of (a)-(g) above; and
- (i) a nucleic acid molecule that is the25 complement of any of (a)-(g) above.
  - 2. The nucleic acid molecule that is SEQ ID NO:13 or SEQ ID NO:19.
- 30 3. The nucleic acid molecule that is nucleotides 1920-2820 of SEQ ID NO:13.

4. A nucleic acid molecule encoding the polypeptide of SEQ ID NO:14 of SEQ ID NO:20.

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5. A nucleic acid molecule selected from the group consisting of: nucleotides 1-1689 of SEQ ID NO:13, nucleotides 1-1920 of SEQ ID NO:13/ nucleotides 1920-2820 of SEQ ID NO:13, nucleotides 2089-2820 of SEQ ID NO:13, and nucleotides 2089-2889 of SEQ ID NO:13.

- 6. A nucleic acid molecule encoding amino acids 640-940 of the polypeptide of SEQ ID NO:14.
- 10 A vector comprising the nucleic acid molecule of claim 1.
  - 8. A vector comprising the nucleic acid molecule of claim 2.
  - 9. A vector comprising the nucleic acid molecule of claim 3.
- 10. A vector comprising the nucleic acid molecule of claim 4. 20
  - A vector comprising the nucleic acid molecule of claim 5.
- 25 A vector comprising the nucleic acid molecule of claim 6.
  - 13. A host cell comprising the vector of claim 7.
  - 14. A host cell comprising the vector of claim 8.
- 15. A host cell comprising the vector of 35 claim 9.

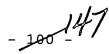
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- 16. A host cell comprising the vector of claim 10.
- 17. A host cell comprising the vector of 5 claim 11.
  - 18. A host cell comprising the vector of claim 12.

19. A process for producing a TP2 polypeptide comprising the steps of:

- (a) expressing a polypeptide encoded by the nucleic acid of claim 1 in a suitable host; and
  - (b) isolating the polypeptide.

20. The process of claim 19 wherein the polypeptide is SEQ ID NO:14 or SEQ ID NO:20.

- 21. The process of claim 19 wherein the 20 polypeptide is amino acids 640-940 of SEQ ID NO:14.
  - 22. A TP2 polypeptide selected from the group consisting of:
    - (a) the polypeptide of SEQ ID NO:14;
- 25 (b) the polypeptide that is amino acids 640-940 of SEQ ID NO:14;
  - (c) the polypeptide of SEQ ID NO:20; and
  - (d) a polypeptide that is at least 90 percent identical to any of the polypeptides of (a)-(c).
  - $23.\ \mbox{A TP2}$  polypeptide that is the polypeptide of SEQ ID NO:14, SEQ ID NO:20, or a biologically active fragment thereof.
- 24. A TP2 polypeptide selected from the group consisting of: amino acids 1-563 of SEQ ID NO:14; amino

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acids 1-640 of SEQ ID NO:14; amino acids 640-940 of SEQ ID NO:14; amino acids 696-940 of SEQ ID NO:14; and amino acids 696-953 of SEQ ID NO:14.

25. The TP2 polypeptide of claim 22 that does not possess an amino terminal methionine.

26. A method of increasing proliferation of a cell, comprising \expressing a nucleic acid encoding TP2 or a biologically \active fragment thereof, in the cell.

A method of increasing telomerase activity in a cell, comprising expressing a TP2 gene, or a biologically active fragment thereof, in the cell.

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A method of decreasing telomerase in a 28. cell, comprising expressing a TP2 mutant in a cell, wherein the mutant does \not have TP2 biological activity.

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29. A nucleic acid molecule encoding a mutant TP2 polypeptide, wherein the codon for aspartic acid at amino acid position 868 or \$69 is changed to a codon for alanine.

30. A nucleic acid\molecule encoding a mutant TP2 polypeptide, wherein the  $c\phi$ dons for aspartic acid at amino acid positions 868 and 869 are changed to codons for alanine.

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- 31. A polypeptide encoded by the nucleic acid molecule of claim 29.
- A polypeptide encoded by the nucleic acid molecule of claim 30. 35

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